

CLAIMS

1. (Amended) An artificial ear comprising: a sending unit (2) configured to convert a sound having a predetermined frequency into an electric signal and send the electric signal; and a reception unit (3) configured to receive the sent electric signal and apply it to a predetermined nerve in a cochlea, characterized in that

said sending unit (2) includes:

a plurality of resonators (21b) which have resonant frequencies different from each other and vibrate with sounds having same frequencies as the resonant frequencies;

a conversion section (21) configured to convert vibration of each of said plurality of resonators (21b) into a signal corresponding to level of the vibration; and

a sending section (28) configured to send a predetermined signal among signals converted by said conversion section (21) to said reception unit (3), and

said reception unit (3) includes:

a plurality of electrodes (4a) which are connected to nerves present in the cochlea and each corresponding to different frequencies from each other; and

a supply section (34) configured to supply a signal supplied from said sending section (28) to a predetermined electrode among said plurality of electrodes (4a) thereby stimulating a nerve corresponding to a predetermined frequency, and

said plurality of resonators (21b) have their ends at one side held independent from each other.

2. The artificial ear according to claim 1, characterized in that said sending unit (2) further includes an amplifying section (22) configured to amplify a signal converted by said conversion section (21) by a gain which varies in accordance with the respective resonant frequencies possessed by said plurality of resonators (21b).

3. The artificial ear according to claim 2, characterized in that said sending section (28) includes a first selection section (23) configured to select a signal to be sent to said reception unit (3) from signals amplified by said amplifying section (22).

4. The artificial ear according to claim 3, characterized in that said supply section (34) includes a second selection section (32) configured to select an electrode (4a)

to which a signal from said sending section (28) is to be supplied.

5. The artificial ear according to claim 4, characterized in that said sending section (28) sends a start signal representing a start of operation by said first selection section (23) and an end signal representing an end of operation by said first selection section (23) to said reception unit (3) in order to synchronize selection operations of said first selection section (23) and second selection section (32) with each other, and

said second selection section (32) starts operating in response to the start signal and finishes operating in response to the end signal.

6. The artificial ear according to claim 2, characterized in that said sending unit (2) further includes a storage section (25) configured to store gains for the respective resonant frequencies possessed by said plurality of resonators (21b).

7. (Added) The artificial ear according to claim 1, characterized in that said plurality of resonators (21b) have their ends at the other side connected to a support shaft (21a) and supported by said support shaft (21a).

8. (Added) The artificial ear according to claim 7, characterized in that said plurality of resonators (21b) are arranged on both sides of said support shaft (21a).

9. (Added) The artificial ear according to claim 8, characterized in that said plurality of resonators (21b) have different lengths from each other and are arranged on said support shaft (21a) in an order of a larger length to a smaller length from one end toward the other end of said support shaft (21a).